2019-06-17

You did not turn up I did not realise I was invited: understanding male attitudes towards engagement in fertility and reproductive health discussions

Grace, B

10.1093/hropen/hoz014
Human Reproduction Open
Oxford University Press

You did not turn up… I did not realise I was invited…: Understanding male attitudes towards engagement in fertility and reproductive health discussions

Running Title: Engaging men in reproductive health discussions

B. Grace[1*, 3], J. Shawe[2], S. Johnson[3], J. Stephenson[1].

[1]Research Department of Reproductive Health, UCL Institute for Women's Health, Faculty of Population Health Sciences, University College London, London, UK. [2]The Institute of Health and Community, Faculty of Health & Human Sciences, the University of Plymouth, Plymouth, UK.[3] SPD Development Company Limited, Priory Business Park, Stannard Way, Bedford, UK.

*Correspondence address. UCL Institute for Women's Health, Faculty of Population Health Sciences, Room 236 Medical School Building, University College London, 74 Huntley Street, London, United Kingdom, WC1E 6A. Email: bola.grace@ucl.ac.uk

Abstract

STUDY QUESTION:

What are the underlying reasons for low male engagement in fertility and reproductive health discussions and decision making?

SUMMARY ANSWER:

The perception of women's primacy in fertility and reproductive health limits the extent to which men believe their engagement is important.

WHAT IS KNOWN ALREADY:

Active participation of men in the process of informed decision making regarding childbearing is beneficial for mother, father and child. However, in research studies in these areas, little attention has been given to men. Additionally, there is poor engagement by men; as well as a dearth of information from, and on, the male perspective.

STUDY DESIGN, SIZE, AND DURATION:

In total, 35 semi-structured telephone and face-to-face interviews were conducted in an office setting with three groups: 13 lay women, 13 lay men and nine male and female healthcare professionals. Interviews took place between October 2016 and February 2017.

PARTICIPANTS/MATERIALS, SETTING, METHODS:

Participants were men and women of reproductive age from the general population and healthcare professionals who had completed an online fertility awareness survey and agreed to follow-up interviews. Interviews were audio recorded and lasted approximately 1 hour, during which participants were asked to provide their views on childbearing decision making, and male and

female representation in fertility and reproductive health. Data was transcribed verbatim and analysed qualitatively via framework analysis.

MAIN RESULTS AND THE ROLE OF CHANCE:

Both men and women saw fertility as a woman's issue, but from different viewpoints. Women saw it from the perspective of societal stereotypes regarding male and female roles, whereas men tended to defer to the woman's primacy in reproductive decisions.

Men generally wanted to be involved in childbearing discussions and improve their fertility knowledge. However, they felt they did not have a voice on the topic because discussions have traditionally focused on women. The notion that men are not expected to be interested and engaged thus becomes a self-fulfilling prophecy.

Healthcare professionals agreed that fertility was perceived as the woman's domain, but also highlighted that poor male involvement is typically observed across healthcare needs and is not necessarily unique to fertility and reproductive health.

LIMITATIONS, REASONS FOR CAUTION:

Due to the online recruitment method, there is a potential bias towards respondents of higher, rather than lower, socioeconomic status within the general population.

WIDER IMPLICATIONS OF THE FINDINGS:

Fertility tends to be seen as a private topic. Additional concerted effort by reproductive health researchers, charity organisations, educators, healthcare service providers and policy makers is needed to proactively encourage male involvement in reproductive decision making. This can be achieved through normalising and breaking taboos around the topic, male-friendly research study design approaches, male-inclusive reproductive healthcare services, implementation of health policies that recognise the needs of men, encouraging male research staff representation and age-

appropriate educational programmes on sexual and reproductive health, which include boys and adolescents from a young age.

STUDY FUNDING/COMPETING INTEREST(S):

Research funding was received from SPD Development Co. Ltd. BG and SJ are employed by SPD Development Co. Ltd. None of the other authors have any conflict of interest related to the discussed topic.

TRIAL REGISTRATION NUMBER:

Not applicable.

Key words

Fertility awareness / family building / qualitative research/ men's health / preconception health psychosocial issues / reproductive health / fatherhood / childbearing / relationships and sex education.

WHAT DOES THIS MEAN FOR PATIENTS?

This study aimed to understand the reasons for low male engagement in fertility and reproductive health discussions and decision making, compared with females, and to identify opportunities to increase men's engagement in order to help men and women achieve their desired childbearing intentions.

Men, women and healthcare professionals took part in telephone and face-to-face interviews. Both men and women agreed that fertility was seen as a woman's issue, but from different perspectives. Women saw it from the perspective of societal stereotypes regarding male and female roles but men

felt that women had more rights in this area because women get pregnant and physically carry the child. The men who participated in this study wanted to be involved in childbearing discussions and to improve their fertility knowledge but they felt they did not have a voice on the topic because discussions typically focus on women. Healthcare professionals also agreed that fertility is seen as a woman's issue but highlighted that low male engagement is seen across healthcare needs and is not necessarily unique to fertility and reproductive health.

The researchers suggest that additional concerted effort is required by educators, researchers, charities, healthcare service providers and policy makers to proactively encourage male involvement in fertility and reproductive health. They recommend that reproductive health service provision and research studies in this area should be more inclusive of men and support the implementation of health policies that recognise men's reproductive health needs. Additionally, educational programmes on sexual and reproductive health should be engaging and structured with age-appropriate information to include boys from a young age.

Introduction

Global health policies recommend that men should be included in reproductive health discussions since their involvement is beneficial for healthy pregnancies, reduction of unwanted pregnancies and in promoting positive outcomes for mother, father and child (World Health Organization 2002; Dean et al. 2013; World Health Organization 2015). Furthermore, the World Health Organization recommends increasing the active participation of men, as well as their responsibility in the process of informed decision making on sexual and reproductive health issues (World Health Organization 2015). The evidence about the importance of optimal paternal preconception health for the health of the offspring is growing (Stephenson et al. 2018; Fleming et al. 2018).

The trend of delaying childbearing has led to an increase in involuntary childlessness or having fewer children than desired, which has prompted attention to the need to improve fertility awareness (Harper et al. 2017). Although the biological contribution of both men and women is necessary, from public health and psychosocial perspectives, studies on fertility and reproductive health disproportionally focus on women (Davison et al. 2016; Culley et al. 2013; Bodin et al. 2018). Where men have been included in studies, the findings show low fertility awareness. A recent systematic review of fertility awareness studies showed that men had poor knowledge of factors that influence fertility (Hammarberg et al. 2017). However, research studies in these areas have highlighted a dearth of information from, and on, the male perspective (Culley et al. 2013; Barnes 2014; Davis et al. 2016).

The underrepresentation of men in fertility and reproductive health research studies impedes the implementation and promotion of effective, male-friendly reproductive healthcare practices and policies. While numerous reasons for the lack of inclusion of men in studies on fertility and reproductive health have been put forward, few studies have actually included men (Greene & Biddlecom 2000; Davison et al. 2017; Mitchell et al. 2007; Saewyc 2012). From researchers' perspectives, men's poor engagement is often interpreted as low interest, which in turn often is

cited as a reason for the lack of inclusion of men in these studies (Mitchell et al. 2007; de Lacey 2014; Culley et al. 2013).

In this study, we interviewed men and women of reproductive age from the general population and healthcare professionals, to better understand the underlying reasons for men's poor engagement in reproductive decision-making and identify opportunities for improvement.

Materials and Methods

Participants

This study was a qualitative component of a larger mixed-method study about fertility awareness. Participants were men and women of reproductive age from the general population and health professionals, who had completed a survey and agreed to a follow-up interview. Of the 1080 survey respondents, 1029 agreed to be contacted for follow-up studies. A new study invitation email was sent for the qualitative interviews. Criteria based purposive sampling was used to cover the socio-demographic diversity of the population groups. For the men and women of the reproductive age, selection criteria included age, ethnicity and level of education. In total, 171 survey respondents were approached for follow-up interviews, of whom 13 lay men, 13 lay women and nine healthcare professionals, 2 male and 7 female, were included. Thirty-two telephone interviews and three in-person face-to-face interviews were conducted between October 2016 and February 2017 and lasted 1 hour on average. Interviews were conducted in an office setting at the University College London (UCL), London, England. The majority of interviews were conducted by telephone because of the geographic spread of survey respondents across the UK; England, Wales, Scotland and Northern Ireland. Participants received a £20 electronic shopping voucher for their participation in the interviews.

Ethical approval

Favourable ethical approval was obtained from UCL Research Ethics committee (Reference 8421/001). All participants in the study participated voluntarily and gave informed consent.

Data collection and analysis

The face-to-face and telephone interviews were conducted sensitively by one female interviewer trained in qualitative research methods. An interview topic guide was used to initiate discussion. Broadly, the topics covered during the interviews included: introductions and study overview; demographic questions; level of interest in fertility and reproductive health discussions; knowledge of the topic; childbearing information and role in decision-making; views on male and female representation in fertility and reproductive health discussions; underlying reasons for these representations; opportunities for improvement and study conclusions. All interviews were digitally recorded, transcribed verbatim and coded electronically using the NVIVO Pro qualitative data analysis software Version 11 (QSR International Pty Ltd. Burlington, MA, USA). Data analysis was conducted using the Framework methodology. The method's key feature is a matrix output comprising rows (cases), columns (codes) and 'cells' of summarised data. This provides a structure into which the data can be systematically reduced by the researcher in order to analyse it by case and by code (Gale et al. 2013). The coded framework matrix was exported from the NVIVO software into a Microsoft Excel file (Microsoft Corporation, Redmond, Washington USA) which was used for further examination, categorisation and analysis. In summary, the data analysis process consisted of the coding of individual quotations verbatim, summarising quotations, grouping into higher order categories (themes) and conducting within-theme analysis. Inductive analysis was used to analyse the themes that came from participants and preliminary summaries were generated, with minimal interpretation, to allow the data to speak for itself.

Results

Participant demographics

The demographic characteristics of study participants are shown in Table I.

Themes

The themes which emerged from the interview data are presented in this section. These themes are categorised into barriers identified and proposed solutions.

Barriers identified

"We have not been invited"

When men were asked why they have not typically engaged with this topic, a key recurring theme was that men have traditionally not been encouraged to participate in fertility and reproductive health discussions. Men in this study wanted to be more involved but felt that they did not have a voice on the issue. They highlighted the fact that the focus was always on women when discussing the topic. Consequently men gradually withdrew from involvement.

"… It's because we've not been invited, we've not been involved before, you know, we've not been told anything - my generation anyway, I've never been given anything from the school or a doctor. It's like we should not be interested, so we're not." Male participant, age 36 years.

Perception that fertility is only the woman's issue

The assumption of women's primacy in fertility and reproductive health was a recurring theme, particularly the perception of fertility being a "woman's issue". The fact that women get pregnant and physically carry a child causes men to feel that the woman's role is more important.

"Fertility is more for the women. As in, they get pregnant and the bloke doesn't… fertility is something that men always take for granted anyway… it's possibly just indicative of the level to which men feel that they are responsible for the process… fertility is something that men always take for granted anyway and also it's a double-edged sword… but women always suffer the consequences." Male participant, age 27 years.

In terms of fertility education provided on digital platforms, smartphone applications, or through use of products that provide fertility information, men also reported gaps in this area because these products are often targeted at women and focus on women exclusively.

Views on reproductive rights

"Her body, her rights" was another recurring theme. Strongly linked to the previous point raised by men: that as women physically carry the child they consequently have more rights and decision-making authority on any issues. This causes men to feel that their role is less important than that of the woman.

"… I don't know, I just feels like it's her body her rights you know? She has more say on it … I just went with her views?" Male participant, age 38 years.

Fertility being taken for granted

When asked about their perception of male fertility, the men had poor awareness of age-related fertility decline. Men frequently cited the "biological clock" as something that only affects women and that men's fertility is never in question.

"I think that most men would look at the study [fertility awareness] and think that it was something that women will do, because most men think that their fertility is never in question. They don't have a biological clock. It's kind of like a chauvinistic thing" Male participant, age 43 years.

Women also felt that men were not as engaged as they should be on this topic. Similar to male participants, we found recurring themes from female participants regarding men being distanced from fertility issues and the idea that only women have a biological clock. They reiterated the perception that men feel that fertility is a woman's issue.

Views on reproductive biology

Women also echoed that the male attitude towards fertility may be driven by reproductive biology. This was based on the fact that men have no menstrual cycle, have less obvious changes compared to women, and the perception that the female reproductive system is more complex than male system.

"[For men] I mean, the whole month is exactly the same, there are no changes, no menstrual cycle… But, you know, female body has more changes, it's more complicated, more difficult to understand... That's why they [men] feel pregnancy's not their business, it's the woman's business, and the woman should know all about it…" Female participant, age 42 years.

Cultural and societal stereotypes regarding male and female roles

Another recurring theme concerned societal attitudes and stereotyping regarding male and female roles. Women highlighted several cultural and societal norms regarding male and female roles, which are often perpetuated by the media and society in general. Women also discussed the impact of gender roles in raising children as one of the factors that influence male involvement.

"She's the one that gets pregnant and she'll be the one who has to take time off work for maternity leave, and has to actually have the child. Men think it's still very much the woman is the main care giver and will be the one who spends more time with the child when they're growing up." Female participant, age 30 years.

Although we quickly reached theme saturation on the impact of cultural and societal norms on male and female roles, some optimism was expressed toward the younger generation of men and the perception that younger men now have different attitudes towards fertility and reproductive health information

"Millennial or younger men probably are better because they've gone grown up with slightly better attitude towards this information." Female participant, age 43 years.

Women and health care professionals emphasised that societal and cultural norms regarding female and male roles contribute to men's lack of engagement with reproductive decision-making.

Low male engagement across healthcare needs

Healthcare professionals expressed the view that although fertility knowledge is poor for both genders, women appeared to be more aware of their fertility than men. Healthcare professionals further stated that they tend to see more women than men for all healthcare needs, not just fertility issues, and that women are generally more open and engaged in health discussions.

"…in terms of talking about it, women are generally more likely to check about these things than men would be concerned… Women, they will chat about responses whereas men, not certain if men say they have actually chatted about fertility and pregnancy and having children." Healthcare professional, age 33 years.

Proposed solutions

Participants were asked for suggestions on how to improve male engagement in this area. This elicited several recommendations.

Men as researchers: Encouraging male research staff representation

One of the improvement opportunities for engaging men is having more male researchers in this area. It was suggested that having more male staff involved in studies on men's health issues will encourage lay men to feel more connected to the topic.

"…If it's been done by a man, then they [men] might think, okay if this guy is discussing his health problems or he's giving advice, if he can do that then okay we can do that ourselves or at least let's try. So I think men may not want to speak to women about this but will listen to other men." Male participant, age 27 years.

Using male-friendly research study design approaches

Another crucial discussion point identified was methods to engage men when designing a study. For example, less direct methods of engagement can be far more effective in engaging participants who feel uncomfortable with the nature of the discussion or sensitive about providing information on their fertility and reproductive health. The male interviewees highlighted a preference for online sources of information on fertility and reproductive health due to perceived privacy and anonymity. One respondent stated that the use of telephone interviews rather than face-to-face interviews encouraged his participation in the study.

"And as enjoyable and interesting as this conversation has been …it is an awkward subject. It's been made a lot easier by not being able to see you [female interviewer]… It's a lot less awkward having this conversation over the phone". Male participant, age 33 years.

Depending on the nature of research, more interactive and hands-on approaches might also encourage men to participate. In terms of strategies for improving male recruitment, suggestions included targeting environments that men frequently use such as gyms, sport centres, health clubs, gambling sites and also targeting specific population groups, such as men in university environments. Other suggestions included the use of surveys and incentivising.

Encouraging participation through partners

Encouragement of male participation through partners was also discussed. Several points were raised regarding encouraging female partners to speak up and include their partners in the conversations.

"Their wife or their girlfriend would be the way to get them engaged. And [laughs] by that it's going to be carrot and stick… you'd find lots of men would attend I think". Male participant, age 38 years.

Healthcare professionals felt that if women took the lead on involvement then men would follow. Some healthcare professionals stated that they specifically encouraged women to come along to appointments with their partners and often asked them to discuss partner's views if they were not present.

Integrating the topic with other healthcare needs

Another point raised by interviewees was the integration of fertility discussions with other health topics that men may find more interesting, in order to make the discussion more attractive and

engaging. Examples include; discussing the effect of health and exercise on fertility; the impact of nutrition on fertility; and psychological and mental health issues associated with infertility.

"I read a lot about men's fitness and things like that, those publications, I'm very much into health, healthy eating and exercising, so I really love that stuff... I'm interested in health and fitness, and I believe what you eat affects everything, it affects your health, whether you're active, your moods, you know everything." Male participant, age 36 years.

Addressing the view that fertility is a private topic

Respondents suggested additional support for both men and women to make the topic easier to discuss, as fertility is often viewed as a private topic.

"Many people see fertility as a private thing between individuals so don't talk about this. Perhaps it's a British thing?" Female participant, age 28 years.

For those who have a strong preference for privacy, male friendly websites and smartphone applications based on robust scientific evidence can be effective platforms for reaching men.

Normalising and breaking taboos around the topic

Suggestions were made to break barriers and taboos around the topic and encourage people start to talk more and open up.

"For a lot of men trying to get them to go to the doctor it's like "drawing blood". Men never think there is anything wrong with them. They don't think they have fertility issues … we need more conversations about fertility and more open discussions e.g. with Samuel Jackson [US actor/celebrity] *and prostate cancer."* Female participant, age 21 years.

Male participants discussed increasing awareness through campaigns and advertisements on this topic as well as the use of celebrities and male sports stars to raise awareness. Use of sports celebrities and campaigns such as *"Movember"*[1] were seen as effective. It was suggested that additional emphasis should be placed on the importance of male involvement in this area.

Healthcare professionals also supported the idea that poor engagement of men by healthcare services and researchers was one of the key reasons for men's low involvement. Active inclusion of men in all aspects of reproductive health discussions was encouraged. Additionally, the issue of poor knowledge in this area was highlighted by healthcare professionals. They called for better education for all (men and women), with additional support for men on basic biology, fertility and reproductive health.

Planting the seed early

Better education and involvement from a young age was discussed as a good way of engaging men and reducing some of the negative and unhealthy cultural stereotypes.

"To target men, you need to get them younger. They need to understand that having babies is not just about women, it's about them as well. They need to understand they have just as much responsibility and they need to make more of an effort. In my classroom I see the influence they get from home, the perception that the dad is just a sperm donor." Female participant, age 38 years.

Discussion

There was a consensus by all groups in our study about low involvement of men in fertility, reproductive health and preconception care discussions. The reasons given by different groups

[1] "The Movember Foundation started in Australia in 2004 with a mission to raise awareness and funds for men's health research. The Foundation's most visible activity is the Movember campaign, in which men from around the world grow moustaches and participate in fund raising activities during the month of November. There are currently more than two million registered 'Mo Bros' willing to grow moustaches in November, plus supportive 'Mo Sistas'"(Wassersug et al. 2015)

varied and implied a need to evaluate additional approaches for improving male involvement. For example, both men and women discussed the idea that fertility was seen as a woman's issue. However, women discussed this from the perspective of societal stereotypes regarding male and female roles, whereas men came from a viewpoint of acknowledging and respecting the woman's primacy in reproductive decisions, citing "Her body, her rights".

Research studies (Barnes 2014; Slauson-Blevins & Johnson 2016) have highlighted the general perception that reproduction is a woman's domain. The perception that fertility is the "woman's issue" also strongly emerged from our study data. However, the most frequently recurring theme for poor engagement specifically cited by men was the fact that they have not been encouraged to engage. Men felt that they did not have a voice on the topic. They felt that the focus was always on women and that women had more 'rights' on the topic, so men gradually withdrew. The notion that men are not expected to be interested, engaged, or involved thus becomes a self-fulfilling prophecy.

Our study also highlighted the negative impact of stereotypical male and female roles in reproductive health, with men being disengaged from fertility and reproductive health discussions and being unaware of the impact of paternal health on the child.

The participants in this study provided valuable insight into the male perspective on fertility awareness and reproductive health. Similar to other studies (Davison et al. 2017; Slauson-Blevins & Johnson 2016), we found that typical methods, such as newspaper adverts and shopping vouchers for attracting and incentivising women to participate in studies, will not necessarily work for men. More targeted approaches in different locations, such as gyms, sport centres, men's health magazines or clinical settings, would be more effective for men.

Similar to other researchers (O'Brien et al. 2018; Hammarberg et al. 2017; Davis et al. 2016; Kotelchuck & Lu 2017; Bodin et al. 2018; Shawe et al. 2019), we recommend increasing support for men to engage with fertility awareness, childbearing, preconception care and reproductive health

services. Given the increasing recognition of the importance of paternal influences in child health (Stephenson et al. 2018; Fleming et al. 2018), men should be encouraged to take a more active role and support should be provided for men who may feel sensitive or embarrassed by the topic. Men and women should also be encouraged to involve, and encourage the involvement of, their partners in discussions. However, it is important to note that when encouraging partner involvement, necessary safeguards should be put in place by the health services to prevent discrimination or marginalisation of women who do not have a male partner, or choose not to involve the male partner in their care.

Male friendly websites and mobile applications based on robust scientific evidence can serve as effective means of reaching and educating men in this area. It is also possible that healthcare providers and researchers have succumbed to traditionally held beliefs regarding male involvement and interest in this area. We recommend that healthcare providers, researchers and educators should routinely provide men with information on reproductive health; and support the implementation of health policies that recognise men's reproductive health needs. We also support recommendations (Barratt et al. 2018; Bhasin 2016) for the allocation of research funding to drive improved and integrated reproductive healthcare for men, which in turn promotes transformative changes in societal attitudes regarding men's reproductive health. We strongly recommend that additional effort be made to provide boys and adolescents with age-appropriate education to improve fertility awareness, normalise the discussion around men's sexual and reproductive health and break taboos around the topic. An important step would be to encourage the inclusion of male researchers in this area.

Study strengths and limitations

One of the key strengths of this study was obtaining men's perspectives on their engagement in fertility and reproductive health discussions. Several studies have hypothesised various reasons for low male engagement in this area but not many have included men. Additionally, this study includes a relatively large number of interviews spanning three different groups. Men, women and healthcare professionals were interviewed using the same interview topic guide, thus providing diverse and interesting perspectives on the subject.

However, it is important to note that the self-selection inherent in responding positively to recruitment advertising indicates an interest in the topic, which we cannot generalise as a whole to all male, female and healthcare professionals. The study findings therefore need to be interpreted with caution. Another limitation is the predominantly online recruitment method, which could result in potential bias towards respondents of higher, rather than lower, socioeconomic status. Finally, this study was conducted in the UK, primarily reflecting western views regarding male involvement in fertility and reproductive health discussions and childbearing decision making. Further research is needed to explore these views in the context of other countries, especially in non-western countries.

The men and women in this study wanted to be engaged in fertility and reproductive health discussions, but felt that men's involvement has not generally been encouraged because fertility is traditionally viewed as the woman's domain. Changes in societal attitudes towards men's reproductive health are required if men are to play a more informed role in fertility and reproductive health. We recommend additional concerted efforts by educators, reproductive health researchers, charity organisation, healthcare service providers and policy makers to proactively encourage male involvement. Educational programmes on sexual and reproductive health should be engaging and structured with age-appropriate information to include boys and adolescents from a young age.

Acknowledgements

The authors would like to thank Sharon Bond, Janet Grannells and Sinead Tothill for their assistance with the study. The authors would also like to thank the men, women and healthcare professionals who participated in the study.

Authors' roles

Study design and concept: B.G., J.S., S.J, J.S. Study execution: B.G. Analysis: B.G., J.S., J.S. Manuscript draft: B.G. Critical discussion and manuscript approval: B.G., J.S. S.J and J.S.

Funding

Research funding was received from SPD Development Co. Ltd.

Conflict of interest

BG and SJ are employed by SPD Development Co. Ltd. None of the other authors have any conflict of interest related to the discussed topic.

References

Barnes, L.W., 2014. *Conceiving masculinity: Male infertility, medicine, and identity*, Available at: http://www.scopus.com/inward/record.url?eid=2-s2.0-84944732929&partnerID=tZOtx3y1.

Barratt, C.L.R., De Jonge, C.J. & Sharpe, R.M., 2018. "Man Up": The importance and strategy for placing male reproductive health centre stage in the political and research agenda. *Human Reproduction*, **33**(4), pp.541–545.

Bhasin, S., 2016. A perspective on the evolving landscape in male reproductive medicine. *Journal of Clinical Endocrinology and Metabolism*, **101**(3), pp.827–836.

Bodin, M. et al., 2018. Can Reproductive Life Plan-based counselling increase men's fertility awareness? *Upsala Journal of Medical Sciences*, **123**(4), pp.255–263.

Culley, L., Hudson, N. & Lohan, M., 2013. Where are all the men? the marginalization of men in social scientific research on infertility. In *Reproductive BioMedicine Online*. pp. 225–235.

Davis, J. et al., 2016. Male involvement in reproductive, maternal and child health: a qualitative study of policymaker and practitioner perspectives in the Pacific. *Reproductive Health*, **13**(1), p.81. Available at: http://reproductive-health-journal.biomedcentral.com/articles/10.1186/s12978-016-0184-2.

Davison, K.K. et al., 2017. Fathers' Perceived Reasons for Their Underrepresentation in Child Health Research and Strategies to Increase Their Involvement. *Maternal and Child Health Journal*, **21**(2), pp.267–274.

Davison, K.K. et al., 2016. Fathers' Representation in Observational Studies on Parenting and Childhood Obesity: A Systematic Review and Content Analysis. *American journal of public health*, **106**(11), p.1980.

Dean, S. V et al., 2013. Importance of intervening in the preconception period to impact pregnancy

463 outcomes. *Nestlé Nutrition Institute workshop series*, 74, pp.63–73. Available at:
464 http://www.ncbi.nlm.nih.gov/pubmed/23887104.

465 Fleming, T.P. et al., 2018. Origins of Lifetime Health Around the Time of Conception: Causes and
466 Consequences. *Lancet*, **391**(10), pp.555–557. Available at: http://dx.doi.org/10.1016/S0140-
467 6736(18)30312-X.

468 Gale, N.K. et al., 2013. Using the framework method for the analysis of qualitative data in multi-
469 disciplinary health research. *BMC medical research methodology*, **13**, p.117. Available at:
470 http://www.ncbi.nlm.nih.gov/pubmed/24047204%0Ahttp://www.pubmedcentral.nih.gov/artic
471 lerender.fcgi?artid=PMC3848812.

472 Greene, M.E. & Biddlecom, A.E., 2000. Absent and Problematic Men: Demographic Accounts of Male
473 Reproductive Roles. *Population and Development Review*, **26**(1), pp.81–115. Available at:
474 http://doi.wiley.com/10.1111/j.1728-4457.2000.00081.x.

475 Hammarberg, K. et al., 2017. Men's knowledge, attitudes and behaviours relating to fertility. *Human*
476 *Reproduction Update*, **23**(4), pp.458–480.

477 Harper, J. et al., 2017. The need to improve fertility awareness. *Reproductive Biomedicine & Society*
478 *Online*, 4, pp.18–20. Available at:
479 http://linkinghub.elsevier.com/retrieve/pii/S2405661817300096.

480 Kotelchuck, M. & Lu, M., 2017. Father's Role in Preconception Health. *Maternal and Child Health*
481 *Journal*, **21**(11), pp.2025–2039.

482 de Lacey, S., 2014. Recruiting men to research about reproduction: A fruitless goal or a challenge?
483 *Australian Nursing and Midwifery Journal*, **22**(5), p.43.

484 Mitchell, S.J. et al., 2007. Conducting studies with fathers: Challenges and opportunities. *Applied*
485 *Developmental Science*, **11**(4), pp.239–244.

O'Brien, A.P. et al., 2018. Men's Preconception Health: A Primary Health-Care Viewpoint. *American Journal of Men's Health*, **12**(5), pp.1575–1581.

Saewyc, E.M., 2012. What about the boys? The importance of including boys and young men in sexual and reproductive health research. *Journal of Adolescent Health*, **51**(1), pp.1–2.

Shawe, J. et al., 2019. Preparation for fatherhood: A survey of men's preconception health knowledge and behaviour in England. *Plos One*, **14**(3), p.e0213897. Available at: http://dx.plos.org/10.1371/journal.pone.0213897.

Slauson-Blevins, K. & Johnson, K.M., 2016. Doing Gender, Doing Surveys? Women's Gatekeeping and Men's Non-Participation in Multi-Actor Reproductive Surveys. *Sociological Inquiry*, **86**(3), pp.427–449.

Stephenson, J. et al., 2018. Before the beginning: nutrition and lifestyle in the preconception period and its importance for future health. *The Lancet*, **391**(10132), pp.1830–1841. Available at: http://dx.doi.org/10.1016/S0140-6736(18)30311-8.

Wassersug, R., Oliffe, J. & Han, C., 2015. On manhood and Movember...or why the moustache works. *Global Health Promotion*, **22**(2), pp.65–70.

World Health Organization, 2002. *Programming for male involvement in reproductive health*,

World Health Organization, 2015. WHO recommendations on health promotion interventions for maternal and newborn health. *World Health Organization*, **20**(1211), p.94. Available at: www.who.int.